WHAT IS CLAIMED IS:

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1. A video encoding apparatus comprising:

a feature amount computation section configured to divide an input video signal into a plurality of scenes each comprising at least one temporally-continuous frame, and compute a statistical feature amount for each scene;

an encoding parameter generator section configured to generate an encoding parameter for each scene based on the statistical feature amount computed by said feature amount computation section;

a number-of-generated-bits prediction section configured to predict the number of bits to be generated when the input video signal is encoded using the encoding parameter generated by said encoding parameter generator section;

an encoding parameter correcting section configured to correct the encoding parameter based on a result of the prediction of the number of generated bits which is obtained by said number-of-generated-bits prediction section;

an encoder section configured to encode the input video signal using the corrected encoding parameter and generate an encoded bit stream; and

an output section configured to output the encoded bit stream generated by said encoder section as an encoded output.

2. A video encoding apparatus according to claim 1, wherein said encoding parameter generator section includes a setting unit configured to set a weight to a quantization step size for macro blocks of frames to be encoded for each scene on the bases of the statistical feature amount relating to a distribution of luminance for each macro block.

3. A video encoding apparatus according to claim 1, wherein said feature amount computation section includes a classification unit configured to classify the plurality of scenes into a plurality of scene types, based on the statistical feature amount relating to a motion vector, and said encoding parameter generator section includes a setting unit configured to set a weight to a frame rate and a quantization step size for each scene according to the scene types.

4. A video encoding apparatus according to claim 3, wherein said encoding parameter generator section includes a setting unit configured to set a weight to a quantization step size for macro blocks of frames to be encoded for each scene on the bases of the statistical feature amount relating to a distribution of luminance for each macro block.

5. A video encoding apparatus according to claim 1, wherein said feature amount computation section is configured to extract the number of motion

vectors, a distribution of motion vectors, a vector size, a motion compensation residual error and a luminance/chrominance variance as feature amounts, and aggregate the feature amounts for each scene to obtain the statistical feature amount for each scene.

6. A video encoding apparatus according to claim 5, wherein said encoding parameter generator section is configured to estimate a motion of an object included in the scenes based on the statistical feature amount and compute a frame rate and a quantization step size which are suitable for each scene based on an estimation result representing the motion of the object.

7. A video encoding apparatus according to claim 6, wherein said encoding parameter generator section includes a setting unit configured to check a distribution of luminance for each of macro blocks configuring each scene and set the quantization step size for each of the macro blocks so as to reduce the quantization step size for macro blocks where mosquito noise is likely to occur or object edges are present, compared to the other macro blocks.

8. A video encoding apparatus according to claim 1, wherein said number-of-generated-bits prediction section is configured to calculate the number of generated bits for each scene when said encoder section encodes the input video signal based on a frame rate and a quantization step size which are

obtained as the encoding parameter, and predict the number-of-generated bits.

9. A video encoding apparatus according to claim 1, wherein said encoding parameter correcting section is configured to correct a bit rate for each scene as an encoding parameter for the purpose of encoding the input video signal so as to satisfy a target bit rate specified by a user.

10. A video encoding apparatus according to claim 1, wherein said encoder section is configured to receive a bit rate and a frame rate which are specified for each scene as the corrected encoding parameter, and encode the input video signal according to the bit rate and the frame rate so that the bit rate for each scene coincides with the specified bit rate.

11. A video encoding apparatus according to claim 1, wherein said encoder section includes a determination unit configured to receive a bit rate specified for each scene as the corrected encoding parameter, and determine a quantization step size and an interval between frames to be encoded, using an occupancy of a virtual buffer which changes in correspondence with the bit rate specified for each scene.

12. A video encoding apparatus according to claim 1, wherein said feature amount computation section includes a determination unit configured to

determine a second frame as a delimiter for separating the scenes if a difference between a first frame and the second frame adjacent thereto exceeds a predetermined threshold and a difference between the first frame and a third frame also exceeds the threshold, and not to determine the second frame as the delimiter if the difference between the first frame and the second frame exceeds a predetermined threshold but the difference between the first frame and the second frame does not exceed the threshold.

13. A video encoding apparatus according to claim 1, wherein said feature amount computation section is configured to compute motion vectors of macro blocks of each of all frames of the input video signal, a motion compensation residual error, and an average and variance of the luminance to obtain the feature amount.

14. A video encoding apparatus according to claim 13, wherein said feature amount computation section is configured to classify the scenes into a plurality of scene types according to a distribution of motion vectors of each frame, and said encoding parameter generator section includes a determination unit configured to determine a frame rate and a bit rate for each scene using the scene types and the feature amount.

15. A video encoding method comprising:

dividing an input video signal into a plurality of scenes each comprising at least one temporally-continuous frame;

computing a statistical feature amount for each scene;

generating an encoding parameter for each scene based on the statistical feature amount computed by the feature amount computing step;

predicting the number of bits to be generated when the input video signal is encoded using the encoding parameter generated by the encoding parameter generating step;

correcting the encoding parameter based on a result of the prediction of the number of generated bits which is obtained by the number-of-generated-bits predicting step; and

encoding the input video signal using the corrected encoding parameter to generate an encoded bit stream.

16. A method according to claim 15, wherein the encoding parameter generating step includes setting a weight to a quantization step size for macro blocks of frames to be encoded for each scene on the bases of the statistical feature amount relating to a distribution of luminance for each macro block.

17. A method according to claim 15, wherein said feature amount computing step includes classifying the

plurality of scenes into a plurality of scene types, based on the statistical feature amount relating to a motion vector, and said encoding parameter generating step includes setting a weight to a frame rate and a quantization step size for each scene according to the scene types.

18. A method according to claim 17, wherein the encoding parameter generating step includes setting a weight to a quantization step size for macro blocks of frames to be encoded for each scene on the bases of the statistical feature amount relating to a distribution of luminance for each macro block.

19. A recording medium having a computer program recorded therein for encoding an input video signal, said computer program comprising:

instruction means for instructing the computer to divide an input video signal into a plurality of scenes each comprising at least one temporally-continuous frame and compute a statistical feature amount for each scene;

instruction means for instructing the computer to generate an encoding parameter for each scene based on the statistical feature amount;

instruction means for instructing the computer to predict the number of bits generated when said input video signal is encoded using the encoding parameter;

instruction means for instructing the computer to

correct the encoding parameter based on a result of the prediction of the number of generated bits; and

instruction means for instructing the computer to encode the input video signal using the corrected encoding parameter and generate an encoded bit stream.